



EPA/EPO/OEB  
D-80298 München  
+49 89 2399-0  
TX 523 656 epmu d  
FAX +49 89 2399-4465

Europäisches  
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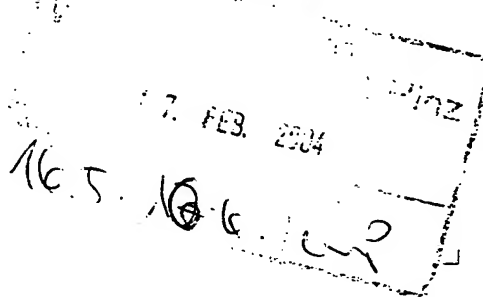
Generaldirektion 2

Directorate General 2

Direction Générale 2

WALTHER, WALTHER & HINZ  
Patentanwälte  
Heimradstrasse 2  
34130 Kassel  
ALLEMAGNE

Kopie  
Fotokopie



Telephone numbers:

Primary Examiner  
(substantive examination) +49 89 2399-7558

Formalities Officer / Assistant  
(Formalities and other matters) +49 89 2399-2271



Application No. 02 001 586.3 - 2207	Ref. 20485 EP	Date 16.02.2004
Applicant SMA Regelsysteme GmbH		

**Communication pursuant to Article 96(2) EPC**

The examination of the above-identified application has revealed that it does not meet the requirements of the European Patent Convention for the reasons enclosed herewith. If the deficiencies indicated are not rectified the application may be refused pursuant to Article 97(1) EPC.

You are invited to file your observations and insofar as the deficiencies are such as to be rectifiable, to correct the indicated deficiencies within a period

**of 4 months**

from the notification of this communication, this period being computed in accordance with Rules 78(2) and 83(2) and (4) EPC.

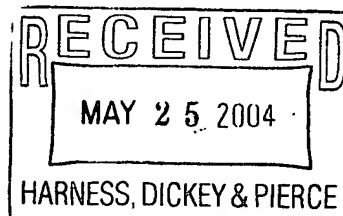
One set of amendments to the description, claims and drawings is to be filed within the said period on separate sheets (Rule 36(1) EPC).

**Failure to comply with this invitation in due time will result in the application being deemed to be withdrawn (Article 96(3) EPC).**



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KANELIS K  
Primary Examiner  
for the Examining Division



Enclosure(s): 3 page/s reasons (Form 2906)

Datum  
Date 16.02.2004  
DateBlatt  
Sheet 1  
FeuilleAnmelde-Nr.:  
Application No.: 02 001 586.3  
Demande n°:

The examination is being carried out on the following application documents:

Text for the Contracting States:

AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE TR LI

Description, pages:

1-8 as originally filed

Claims, No.:

1-20 as originally filed

Drawings, sheets:

1-8 as originally filed

1). Following documents are referred to:

D1: "DEVELOPING A LOW-MASS POWER SUPPLY FOR ELECTRIC RAIL VEHICLES" (1999)

D2: US4825348

2). D1, which is considered as the closest prior art, discloses an

- electronic circuit for the bidirectional conversion (pp. 425, col. 1, par. 3) of a high input voltage (15 kV AC) to a direct-current output voltage (1.6 kV DC) with indirect coupling, more specifically for use in a power supply system for rail vehicles (pp. 423, col. 1);
- provided with a primary converter (pp. 424, col. 2, par. 4), one single common transformer (fig. 3, pp. 425, col. 1, par. 2) and a secondary converter (pp. 425, col. 1, par. 2),
- the primary converter being composed of at least three primary converter sections connected in series (pp. 424, col. 2, par. 4),
- the output lines of which are each connected to a respective one of the transformer primary windings (fig. 2, pp. 425, col. 1, par. 2).

3). D1 discloses all technical features of claim 1, which is therefore not new (Art. 54 EPÜ).

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- 4). The primary converter sections in D1, fig. 2 and pp. 424, col. 2, par. 4, also include 4Q-regulators and bridges, so that claims 2 and 15 are not new (Art. 54 EPÜ).
- 5). L-C resonance circuits connected in series with the primary winding of a transformer are usual in the art as decoupling and compensating circuits, as suggested in D2, fig. 1b and col. 2, line 55. Since the circuit in D1 is balancing the current in several primary windings and reducing harmonics, pp. 425, col. 1, par. 1, it is expected to include such a resonance circuit with appropriate switching frequency and resonance impedance. Claims 3-6 and 8-10 are therefore not inventive (Art. 56 EPC), while claim 7 is not new (Art. 54 EPC).
- 6). The circuit in D1 is obviously trying to balance the power in the partial converters by suitable magnetic circuit design and voltage control, for both, feed and recuperation mode, pp. 425, col. 1. Claims 11-14 are therefore not inventive (Art. 56 EPC).
- 7). Redundancy is also a feature in D1, pp. 424, col. 2, par. 3, so that claim 16 is not new (Art. 54 EPC).
- 8). The circuit in D1, fig. 2 and pp. 425, col. 1, par. 1, includes an input filter, so that claim 17 is not new (Art. 54 EPC).
- 8). It is normal to avoid voltage conversion and reduce switching losses, pp. 426, col. 2, par. 2, when the input voltage is sufficiently low, and to feed the mains voltage directly to the output, so that claim 18 is not inventive (Art. 56EPC).
- 9). An additional series inductor for the LC-resonance circuit is normal, and the skilled person, trying to correct his resonance impedance obviously would connect an inductor in series with the stray inductance of the primary winding, as described in D2, fig. 1b and col. 2, lines 52-58. Claim 19 is therefore not inventive (Art. 56 EPC).
- 10). The input filter in D1 is also a choke, so that claim 20 is not new (Art. 54 EPC).



- 11). It is not at present apparent which part of the application could serve as a basis for a new, allowable claim. Should the applicant nevertheless regard some particular matter as patentable, an independent claim should be filed taking account of Rule 29(1) EPC. The applicant should also indicate in the letter of reply the difference of the subject-matter of the new claim vis-à-vis the state of the art and the significance thereof.
- 12). When filing amended claims the applicant should at the same time bring the description into conformity with the amended claims. Care should be taken during revision, especially of the introductory portion and any statements of problem or advantage, not to add subject-matter which extends beyond the content of the application as originally filed (Article 123(2) EPC).
- 13). In order to facilitate the examination of the conformity of the amended application with the requirements of Article 123(2) EPC, the applicant is requested to clearly identify the amendments carried out, irrespective of whether they concern amendments by addition, replacement or deletion, and to indicate the passages of the application as filed on which these amendments are based.
- If the applicant regards it as appropriate these indications could be submitted in handwritten form on a copy of the relevant parts of the application as filed.
- 14). To meet the requirements of Rule 27(1)(b) EPC, the document D1 should be identified in the description and the relevant background art disclosed therein should be briefly discussed.
- 15). The applicant is requested to effect the amendments by filing replacement pages for only those pages which have been amended. Unnecessary recasting of the description should be avoided. An amended abstract is not required. The applicant should also take account of the requirements of Rule 36(1) EPC. If handwritten amendments are submitted, they should be clearly legible for the printer. According to the decision of the President of the EPO under Rule 35(2) EPC (OJ EPO 12/2001, 563) one set of the amended documents of the European patent application shall be provided.

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